

Structured Illumination Super-Resolution Modul SIM Basic & SIM Spindisk Series



2023 V2

For customized projects please Contact us:

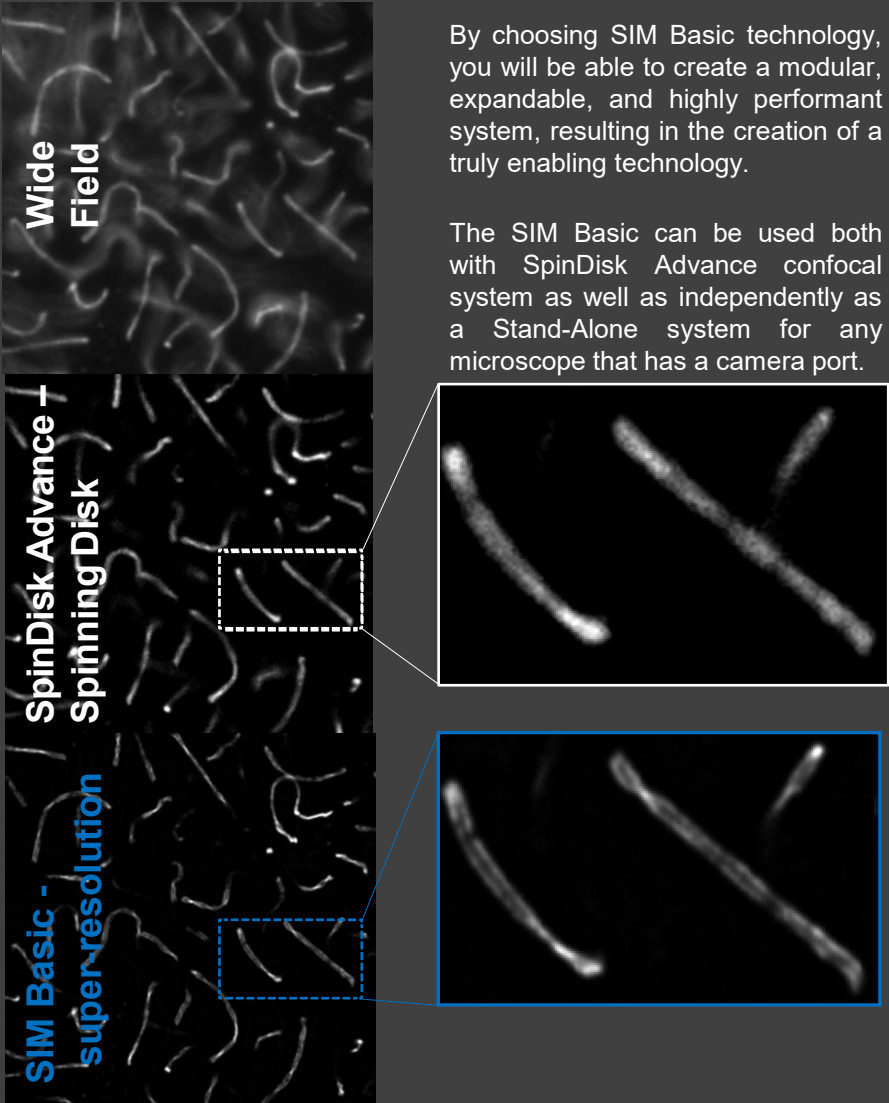
info@simtrum.com

Introduction

SIM Basic - the super-resolution microscopy system that addresses deep biological questions with ease.

Our goal is to make super-resolution accessible to all scientists to advance their research. For this reason, we developed SIM Basic, the first super-resolution module that is compatible with any existing upright or inverted microscope and can be used like a confocal microscope to facilitate access to super-resolved deep data of biological samples.

Three imaging modalities in one setup



Wide Field

SpinDisk Advance - SpinningDisk

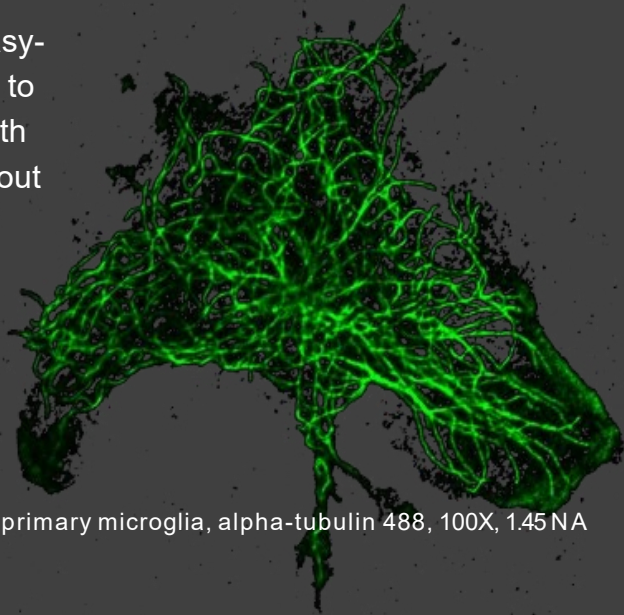
SIM Basic - super-resolution

By choosing SIM Basic technology, you will be able to create a modular, expandable, and highly performant system, resulting in the creation of a truly enabling technology.

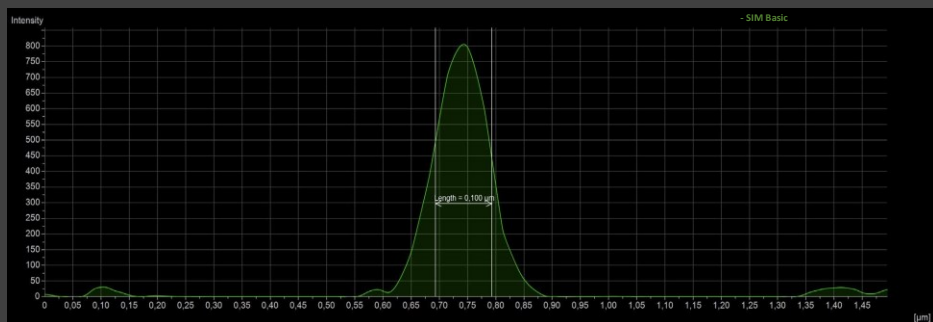
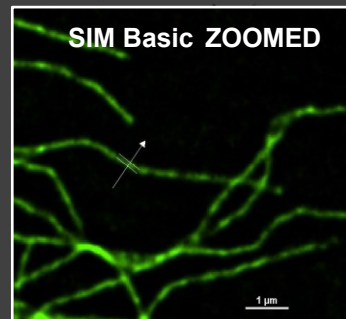
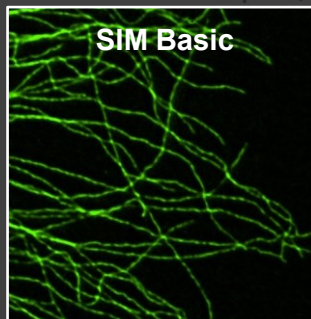
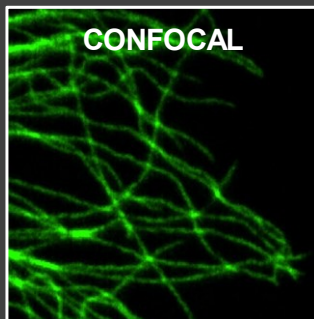
The SIM Basic can be used both with SpinDisk Advance confocal system as well as independently as a Stand-Alone system for any microscope that has a camera port.

A single click to double confocal resolution

Through the using of a multi-spot structured illumination system, SIM Basic provides reliable, easy-to-use and affordable solutions to study sub-cellular structures with a XY resolution of **100 nm** without requiring any special sample preparation protocol.



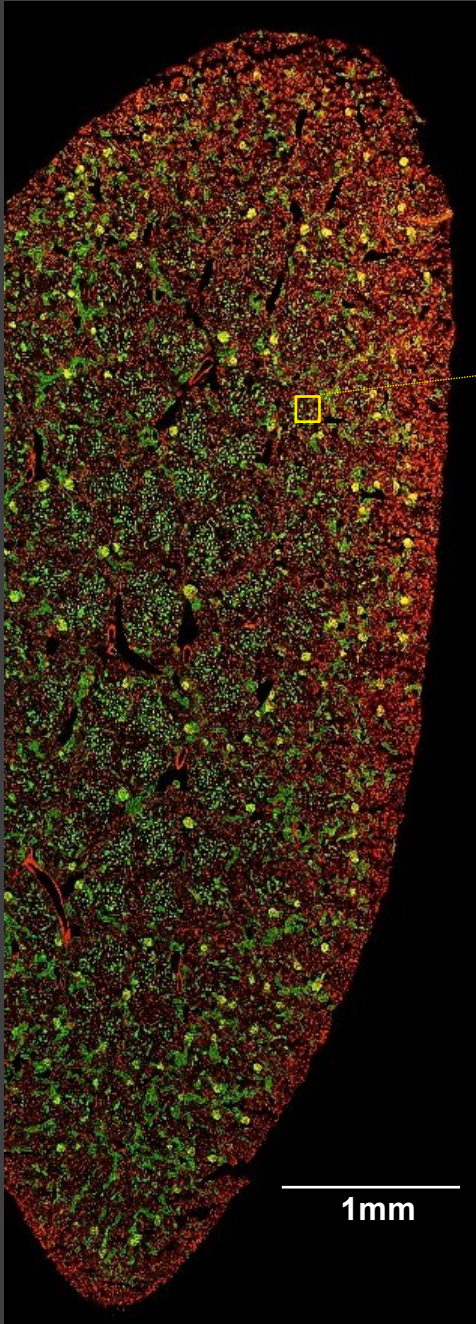
Mouse primary microglia, alpha-tubulin 488, 100X, 1.45 NA



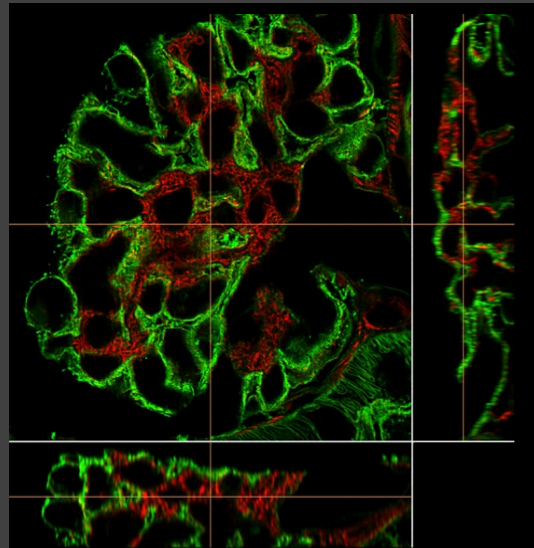
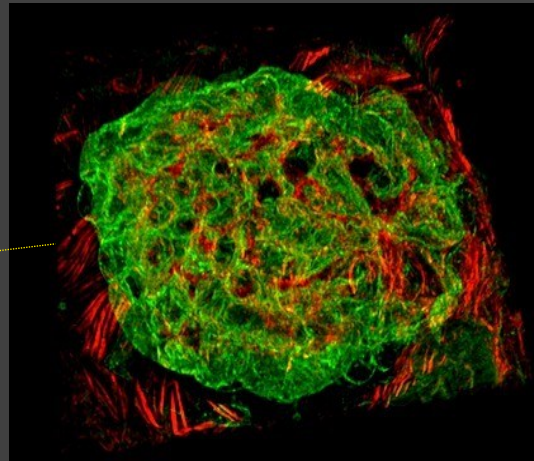
Mouse primary microglia, alpha-tubulin 488, 100X, 1.45NA, 100 nm resolution

Three methods are available for obtaining deep data

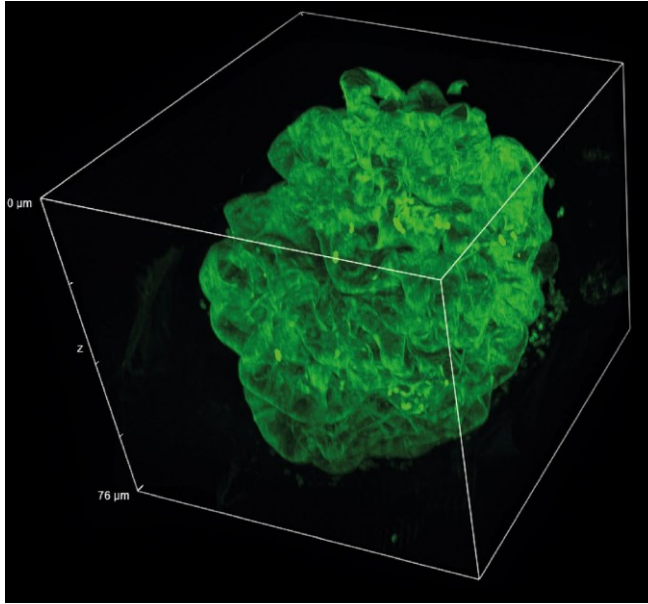
Mouse kidney section. Wheat Germ Agglutinin(WGA, green) and phalloidin (red) markers, 25 Sil, 105 NA acquired with SIM Spindisk Spinning disk system.



With SIM Basic, large confocal acquisitions can be enhanced by adding a deeper level of detail thanks to [super-resolved optical sectioning with Z resolution of up to 300 nm](#).



3D volume views of super-resolved glomeruli, 60X, 1.45 NA. Axial resolution is appreciable through orthogonal views.



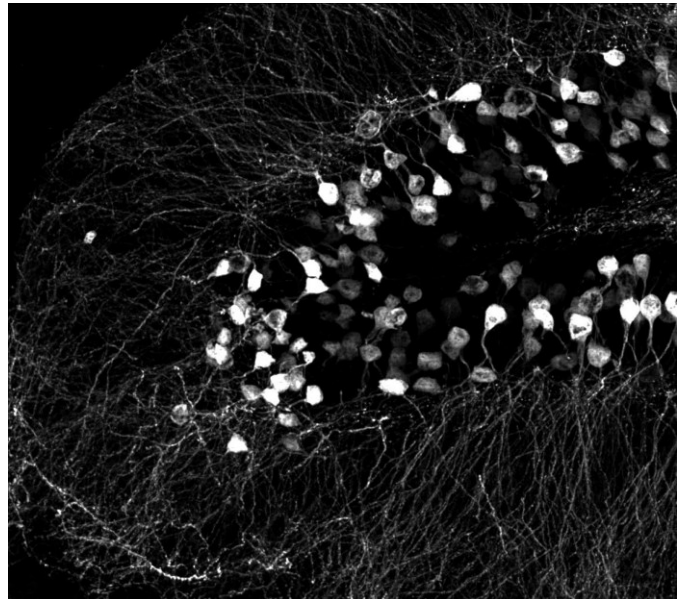
Cleared mouse kidney section stained with Alexa Fluor 488 labeling blood vessels.

Z stack 76 μm and 3D rendering.

It can be used with samples with thicknesses comparable to those used in confocal microscopy, giving super-resolved data over a depth of 50 μm.

In this way, native heterogeneous complex samples can be investigated more thoroughly using routine preparation protocols.

A two-fold increase in spatial resolution can be obtained using both high magnification (60X, 100X) and low magnification (20X, 40X) objectives, thereby enabling the study of complex 3D models such as tissues, spheroids, organoids, and small organisms.

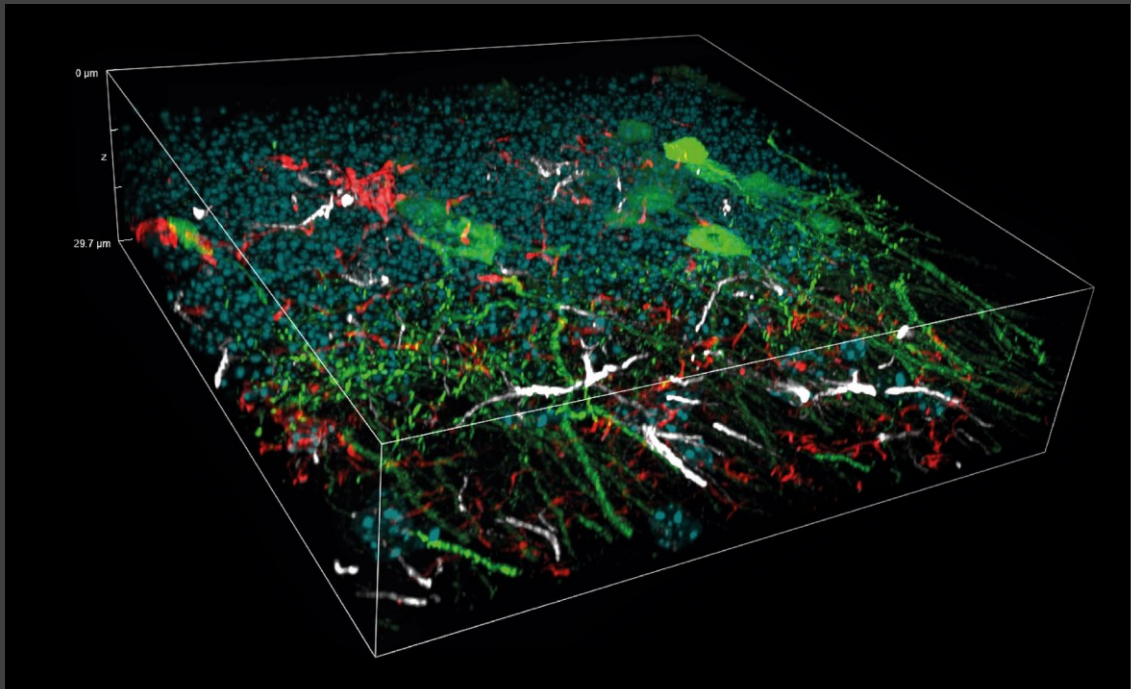


Hippocampal coronal slice from Thy1-GFP mouse brain; 20X dry 0.75 NA.

At any moment, you can find out more

In order to provide maximum flexibility in fluorophore choice and optimal multichannel imaging without spectral overlap, we have designed the instrument to operate across the **entire wavelength spectrum from 400 to 750 nm.**

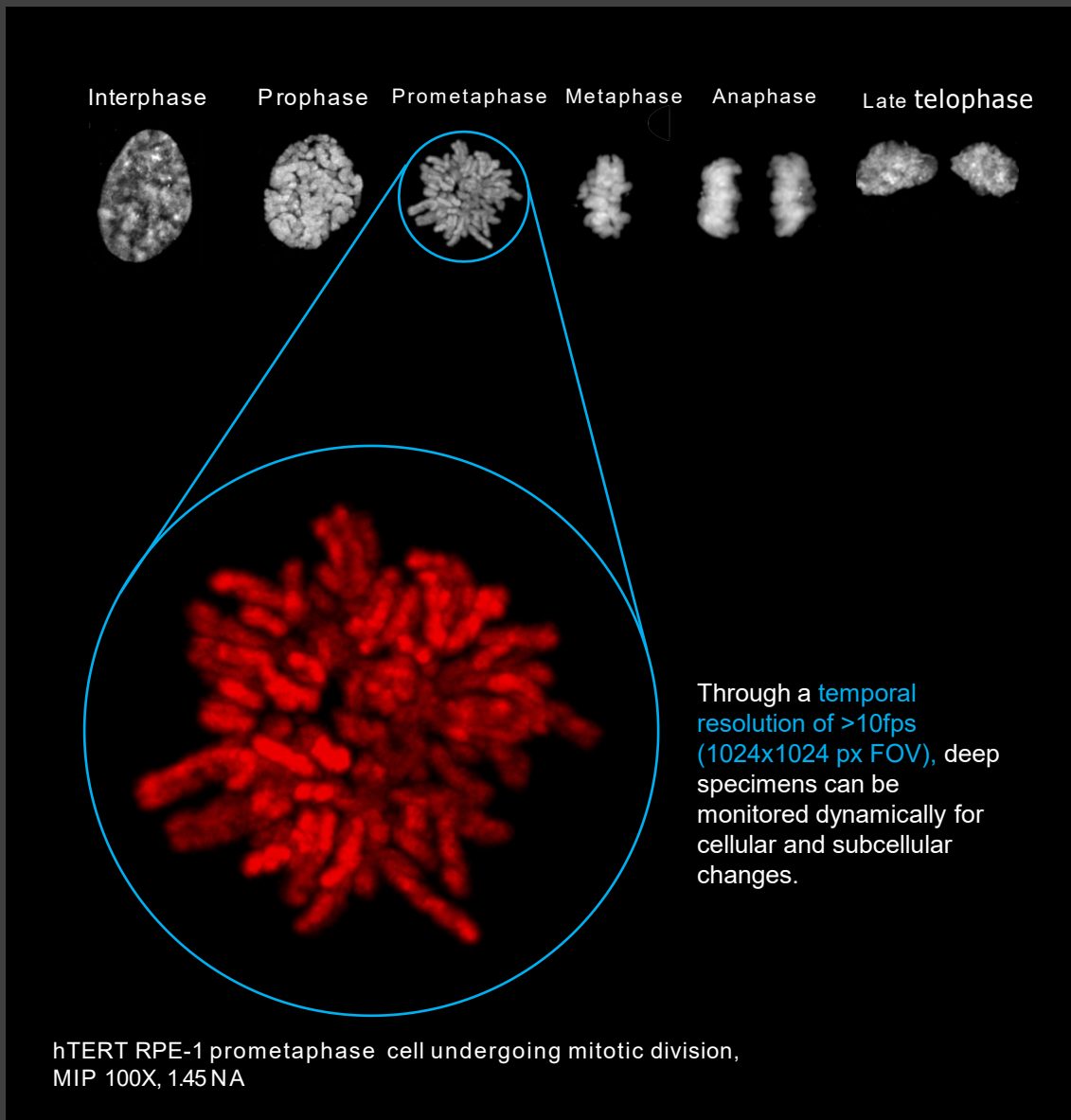
By utilizing the dual camera function of the SIM Spindisk spinning disk system, the SIM Basic can simultaneously acquire multiple channels, resulting in **faster acquisition times.**



3D volume view of a mouse brain tissue section showing neurons with dendritic spines (green), microglia (red), astrocytes (white) and DNA (cyan). Total volume acquired: 30 μm . 60X, oil 1.4 NA

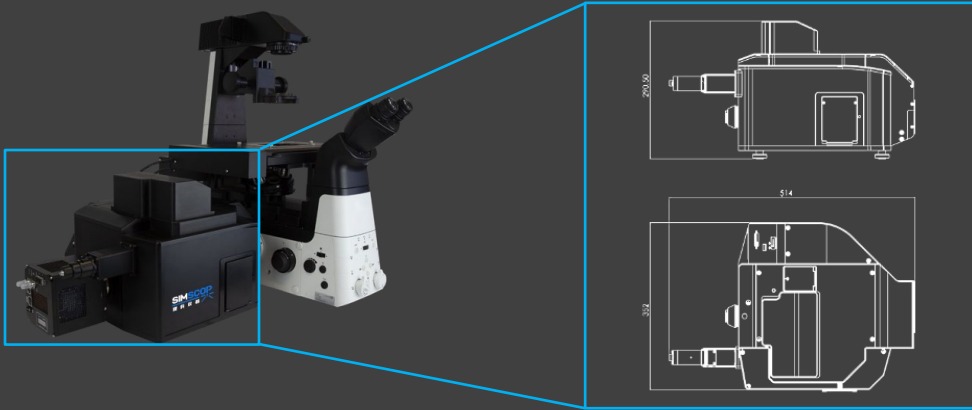
The SIM Basic high-speed acquisition modality allows for the capture of meaningful data at high resolution while **minimizing light exposure** and therefore

The risk of photo-toxicity. A delicate specimen can be explored using this functionality.

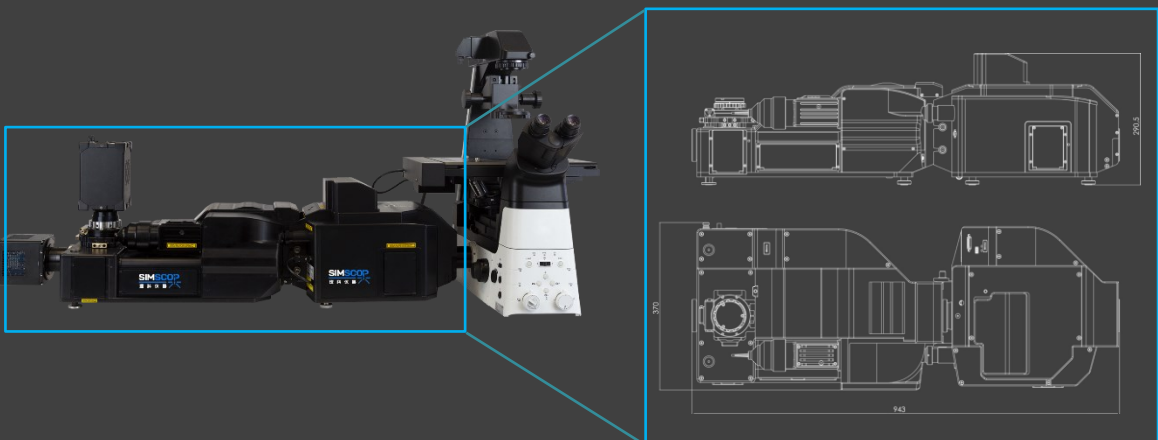


Evolution through compatibility

SIM Basic Stand-alone



Combination with SIM Spindisk



Specifications

| Parameters | SIM Basic | SpinDisk SIM |
|---|---|---|
| FOV | 1024 x 1024 pixel (66 x 66 μm 100X 333 x 333μm 20X) | |
| Resolution | Lateral Resolution (FWHM): ~100 nm (100X NA 1.45) Axial Resolution (FWHM): ~300 nm (100X NA 1.45) | |
| Acquisition Speed | 13fps (1024 x 1024 px) | |
| Laser Spectral Range | Excitation: 400-750 nm; Emission: 400-850 nm | |
| Objective | Magnification Range:20X to 100X High Numerical Aperture (NA) Flat Field Apochromatic Correction | |
| Camera Compatibility | Any Triggered Camera with 6.5μm Pixel Size | |
| Multi Cameras Option | Single Camera | Dual Camera for Option |
| Spinning Disk Upgrade | Single-module Solution | Plugin Compatible with SpinDisk Advance |
| Imaging Mode | Super-resolution Widefield | Super-resolution Confocal Spinning Disk Widefield |
| Microscope Configuration For Upgrade | Upright and Inverted Microscope | Inverted Microscope |
| Software | μManager /VisiView® / NIS Elements | |
| Installation Conditions | Temperature 23 ± 5°C, Humidity 70% RH or less | |
| Weight | 50.7 lbs 23Kg | 44 lbs 20Kg |
| Dimensions | 13.8 (W) x 20.2 (L) x 11.4 (H) inches 352.0 (W) x 514.0 (L) x 290.5 (H) mm | 14.0 (W) x 17.1 (L) x 11.4 (H) inches 356.0 (W) x 435.0 (L) x 290.5 (H) mm |

* Software integration in progress